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NEWS LETTER

BUREAU OF PLANT QUARANTINE

UNITED STATES DEPARTMENT OF AGRICULTURE

Number 40

(NOT FOR PUBLICATION)

April 1, 1934.

(The contents of this number, unless specifically stated otherwise,
cover the month of February only)

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Fruit fly from Italy.--A pupa of Rhagoletis sp. (R. cerasi ?) was intercepted at Philadelphia on dried sour cherries in cargo from Italy.

New record for the Philippines.--Living specimens of Liothrips vaneeckei Pr. (thrips) were intercepted at Seattle, Wash., in two lily bulbs in the mail from the Philippines. J. R. Watson, of Gainesville, Fla., remarks: "It is very interesting to have this supposedly European thrips showing up from the Philippines. Apparently it is getting pretty well distributed over the earth."

Weevil in elm log.--An adult of Brachyrhinus rugosostriatus Goeze (Curculionidae) was intercepted at New York in the bark of an elm log in cargo from France.

Scale insect from Japan.--Poliaspis pini Mask. (Coccidae) was taken at San Francisco on pine in ship's quarters from Japan.

African thrips intercepted.--Living specimens of Frankliniella schultzei (Trybom) were taken at Philadelphia on the stems and buds of Ornithogalum sp. in the mail from South Africa. J. R. Watson reports that this thrips is not known to occur outside of Africa.

Spider beetle from Germany.--Ptinus sexpunctatus Panz. (Ptinidae) was taken at Washington, D.C., in a bag with poplar seed in the mail from Germany. W. S. Fisher, of the Bureau of Entomology, reports this to be a European species which is not established in this country.

Darkling beetle from Guatemala.--Adults of Lorelus trapeziderus Champ. (Tenebrionidae) were taken at Charleston, S.C., on banana leaves in cargo from Guatemala.

Wireworm from Norway.--A living larva of Agriotes lineatus L. (Elateridae) was taken at Galveston, Tex., on dahlia roots in baggage from Norway. This wire-

worm, which is not recorded from the continental United States, feeds in the roots and stems of plants and causes much damage.

Thrips on chrysanthemum.--Living specimens of Thrips japonicus Bagn. were intercepted at Seattle, Wash., on a chrysanthemum leaf in ship's quarters from Japan.

Darkling beetle from Mexico.--An adult of Steriphanus lentus Champ. (Tenebrionidae) was taken at Nogales, Ariz., around the roots of Neomammillaria sp. in cargo from Sonora, Mexico.

Earwig in garlic.--A nymph of Psalis americana Beauv. was intercepted at Brownsville, Tex., in garlic in baggage from Mexico.

Coleopteron in brown oak logs.--Two living adults of Rhizophagus bipustulatus Fabr. (Rhizophagidae) were intercepted at New York in a brown oak log in cargo from England.

Scale insect from Japan.--Protopulvinaria longivalvata Green (Coccidae) was intercepted at San Francisco on Aralia sp. in ship's quarters from Japan.

Thrips from Germany.--Living specimens of Taeniothrips firmus (Uzel) were intercepted at Philadelphia on spruce leaves in the mail from Germany. J. R. Watson reports that this species is not known to occur in this country.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Walnut leaf spot.--On several occasions walnut leaves from Mexico have been sent in on account of leaf spots but as the spots were sterile no determination was possible. More recently a few Cylindrosporium type of spores were found on some spots, a tentative determination of C. juglandis resulting. On February 6, walnut leaves sporulating freely were intercepted at El Paso and the determination of C. juglandis verified by Miss E. K. Cash. This leaf spot is listed in U.S.D.A. Bulletin 1366 as occurring in North Carolina only.

Phoma on Aucuba.--A specimen of Phoma sp. on Aucuba japonica from Japan intercepted at Seattle was referred to Miss E. K. Cash who reports that the spores do not agree with those of any species described as occurring on Aucuba.

Rhododendron leaf trouble.--Miss E. K. Cash reports Heterosporium sp. as affecting a rhododendron leaf collected locally by a Seattle inspector, apparently no species being known to occur on Ericaceae.

Epidendrum rust.--A rust on Epidendrum endresi plants from Costa Rica was intercepted at Washington on February 20, and determined as Uredo epidendri. This orchid rust is listed in Stevenson's manual as occurring in Brazil only. While it is possible this rust was intercepted previously and determined to the genus only, this is the first interception of this species to be identified as such.

Rhabdospora on Ephedra again.--Rhabdospora sp., possibly a large-spored variety of R. kirghisorum, was intercepted at Washington on E. alata and E. strobilacea from the U.S.S.R. Repetek Sand Station. This interesting form was intercepted once before (see News Letter for February 1933, p. 4), from India.

New Fatsia diseases.--Plant disease specimens taken from Fatsia japonica from Japan January 24, at Seattle, have been determined by Miss E. K. Cash as Ascochyta sp. and Phomatospora sp., neither recorded on Fatsia .

Grape dead arm disease.--Our first interception of the dead arm disease of grape (Cryptosporella viticola) was made at Eagle Pass February 18, on grape cuttings from Mexico.

Phoma on husk tomato.--Again this year Phoma destructiva was intercepted in February at El Paso in husk tomato from Mexico. (See News Letter for May 1933, p. 2.)

Phomopsis on Eriobotrya.--Although available lists do not record a Phomopsis on Eriobotrya, a specimen of Phomopsis sp. was collected on Eriobotrya japonica from Italy at Washington on March 3.

Nemas intercepted.--Ginger from China intercepted at Boston February 7 was found to be infested with Anguillulina intermedia. There have been three previous interceptions of this nema, all in 1931, in onion from Germany and Scotland at Philadelphia, and in narcissus from Newfoundland at Boston.

Raphithamnus cyanocercus from England was found infested with Heterodera marioni when inspected at Washington on January 27, this being a new host.

Other nema interceptions of the month included Anguillulina dipsaci in potato from Germany at Houston, New Orleans, and Savannah, from Sweden at Houston (2), Boston, Philadelphia, and Mobile, and from New Brunswick, Canada, at Philadelphia; Anguillulina pratensis in potato from Argentina at Baltimore and in lily-of-the-valley (heavy infestation in roots) from Germany at New York; Aphelenchoides parietinus in potato from Germany at Baltimore (2) and Savannah; and Heterodera marioni in clematis from France, Helenium pumilum from Holland, and Phlox from Germany, all at Washington, and parsnip from Belgium at Philadelphia.

HEAVY INFESTATION OF MEDITERRANEAN FRUIT FLY INTERCEPTED AT PROVIDENCE

Fruits of Sorbus sp., "sorbe apples", are valued in parts of Europe and elsewhere for the delicious preserves which can be made from them. Their use in this manner in this country is limited and little known. Evidently, however, a recent passenger from the Azores had whetted his appetite for this toothsome delicacy, since he had about 500 of these fruits in his baggage when he landed at Providence, R.I. Alas, that appetite was doomed to disappointment, for inspection disclosed the presence of 200 living larvae and pupae of the Mediterranean fruit fly (Ceratitis capitata) in the fruits, and 475 living larvae and pupae were found in the sawdust used as packing material for the fruits! Incidentally, this is the third interception record of Mediterranean fruit fly in sorbe apples.

UNDER COVER OF DARKNESS

A ship ostensibly devoid of restricted plant material docked at San Francisco, discharged general cargo during the night, and left for Portland, Oreg. The plant quarantine inspectors found cottonseed on the discharged cargo and notified the inspector at Portland, where 400 pounds of seed cotton were collected in the hold and burned. A small sample of this seed was sent to Washington where about 25 seeds were cut open. The following insects were found in this small sample: Pectinophora gossypiella (pink bollworm); Necrobia rufipes (a cosmopolitan insect); Lophocateres pusillus (a cosmopolitan insect); Oxycarenus sp. (?) Family Lygaeidae (cotton pest); and Oxycarenus hyalinipennis (a cotton pest which attacks the seed and is not known to occur in this country). While all of these insects were apparently dead in the sample examined, some might have been alive in the remainder of the material from which the sample was taken, or might be alive in the next such lot and represent a distinct pest risk.

Part of the discharged cargo was transshipped and en route to Baltimore when the cottonseed contamination was discovered. This material will be cleaned at that port.

AN INDEX TO THE SERVICE AND REGULATORY ANNOUNCEMENTS

The Service and Regulatory Announcements have been published for a period of 20 years and constitute a permanent record of the work of the Bureau. While practically the whole mass of official information relating to Federal plant quarantine activities during this period appears in these announcements in concise form, reference to the various items is often uncertain, difficult, and tedious. To fill a long-felt need an index which covers the 20-year period has been prepared and is now at the Government Printing Office. In a few cases reference has been made in the index to information not published in the S.R.A. so as to make the lists of circulars, quarantines, regulations, etc., complete.

PLEAS, MONEY, THREATS, NOT DETERRENTS TO PLANT QUARANTINE INSPECTORS

The Customs Bureau at Philadelphia recently called attention to a case from Italy which was manifested as "dried preserves." Close examination revealed the contents included: 1 cactus plant in soil, 7 cactus leaves, 7 rose plants in soil, 2 fig cuttings, 2 amaryllis bulbs in soil, 4 aspidistra plants in soil, 1 lemon plant in soil, 1½ pounds partially cooked chestnuts and 10 pounds of soil. The material was seized and the consignee notified. The latter, an elderly woman, and her son hurried to the office in great excitement, for she placed a deep sentimental value on the seized material. She pleaded and begged, her son offered money, but all she received were firm and courteous replies denying her the plants. In final desperation she exclaimed, "If you no give me plants, I pray you die tomorrow", and departed.

C. A. LOCKE TRANSFERS TO OFFICE OF THE SECRETARY

On March 7 C. A. Locke, who since 1931 has been handling fiscal and personnel matters as Administrative Assistant in the Division of Foreign Plant Quarantines, commenced his new duties as Investigator and first assistant to the Chief Investigator, Office of Investigations. This Office is a unit of the Office of the Secretary.

Mr. Locke came to the Federal Horticultural Board by transfer on May 16, 1920, from the office to which he has now returned. During his 14 years with this organization he has served as private secretary to the Chairman of the Federal Horticultural Board, Executive Assistant and Personnel Officer of the Plant Quarantine and Control Administration, and as Administrative Assistant to the Chief or Acting Chief of the Administration.

ADDITIONAL 'PLANE SERVICE TO MEXICO, D.F., VIA NOGALES

Some time ago the Nogales airport was designated as an international airport. Word has recently come from the Nogales office that a second airline began regular service through that airport on February 26, operating between Los Angeles and Mexico, D.F., via Mexicali and Nogales. Each line now provides service to the Mexican capitol every other day. Since its designation as an international airport the Customs Service has cooperated to the fullest extent with this Bureau in the inspection of the planes.

PSYCHOLOGY IN INSPECTION

There is a tradition that if you walk round and round an owl he will twist his head off in an effort to keep always facing you. Baggage inspectors sometimes take advantage of this same mental quirk in human nature. If when making an examination it is suspected that the passenger is concealing something in his pockets, they will walk round behind him. If he has something hidden on his person he will usually keep turning so as to keep the inspector always in front of him. Otherwise he will remain interested in the baggage. A simple thing but it works.

COLD WEATHER NECESSITATES EXTRA CARE IN HANDLING SPECIAL-PERMIT IMPORTATIONS

The following excerpts are quoted from letters received from firms well known in the nursery business.

"It was mighty kind of you to suggest to {name of broker} to hold this shipment for us until the weather warms up."

"We think that this was a very graceful action on your part for had it not been that the plants were held in Washington until a more favorable weather condition the plants would not have reached us alive. As it was they lost a few leaves but are still alive."

"I want to specially thank you for holding this box {carnations} for several days on account of the low temperature."

The unusual weather conditions which have prevailed in Washington during this winter have made it desirable in many instances to delay the departure of plants from the Inspection House until a particular cold wave had passed. In other instances packages have been wrapped with insulating material to protect against freezing in transit. In some cases it was found on inspection that the cold had damaged shipments before arrival here, necessitating special handling to prevent further injury.

DOMESTIC PLANT QUARANTINES

A revision of circular BPQ-346, giving up-to-date information on the various State regulations relating to the European corn borer, was issued on March 15.

TRANSIT INSPECTION

Marble and granite shipments moving from Vermont to points outside the gypsy moth infested area have recently been available for checking in considerable number through the manning of freight transfer points at Philadelphia and at Cedar Hill (New Haven), Conn. Seventeen such shipments moving from the infested area through Philadelphia, and some 40 or 50 through Cedar Hill, have been reported for further investigation as to certification or as to use of certificates which possibly had expired.

Transit inspection for the spring nursery-stock shipping season was begun in Seattle, Portland, and Kansas City during February, and in Spokane and Omaha during the early part of March. At Pittsburgh, New York, New Haven, and Washington, inspectors of the Japanese beetle force have been recently assigned for checking shipments particularly for compliance with the Japanese beetle quarantine. State inspectors are assisting at New York, Chicago, and Milwaukee, and European corn borer inspectors at Cleveland, Detroit, and Indianapolis, making 39 Federal and State men now participating in the work.

BLACK STEM RUST OF GRAINS

Various species of Berberis seed from England were recently noted by port inspectors, and as the importations were consigned to the grain-growing States of Illinois, Michigan, Minnesota, and Ohio, the packages were forwarded to the Washington office. The seed of species immune to black stem rust was later made available to the importers, and full information provided them as to the State and Federal restrictions on the growing and shipping of species of Berberis in the 13 protected States. State and Federal offices concerned with the control of the rust were informed of the shipments. The seed of susceptible species was refused entry into the barberry-eradication States.

NARCISSUS-BULB PESTS

Narcissus inspections for 1933, as reported to this Bureau by the nursery inspectors of the various States, have been summarized and published in mimeograph form as "BPQ-358--Narcissus Inspection Records for 1933", dated March 15, 1934. The figures show an increase of about 1 percent over the number reported the previous year, this increase occurring in the Paper Whites and other polyanthus types commonly grown in the South. The daffodil type produced in the Northern States shows a decrease from 1932.

To provide a basis for progress in eradicating narcissus nematode infestation from year to year, and for study as to the origin of any newly discovered infestation, a uniform method of reporting eelworm infestation details has been

devised by inspectors in the Pacific Northwest. Copies have been supplied by the Washington office to inspectors of other States growing narcissus, in order that the forms may be given a trial if they so desire.

PHONY PEACH DISEASE

A detailed record of the properties at which phony peach disease infections were found in 1933 during inspections in which Bureau inspectors participated has been received from the Federal inspector in charge. The list shows infection within 1 mile of at least part of the plantings of each of 43 peach-growing nurseries in 30 counties in Alabama, Georgia, Louisiana, Mississippi, Tennessee, and Texas. The environs inspected covered a radius of a mile from the nurseries, and in some instances, more than this distance. The figures do not include nurseries whose stock was exposed to phony peach disease in 1932 and which were not reinspected in 1933. In practically all cases the nursery stock exposed to this disease in either 1932 or 1933 and shipped during the past shipping season has been culled free from peach borer under State supervision with Federal cooperation.

The South Carolina State Crop Pest Commission, effective on November 9, revised the phony peach disease regulations applying to both intrastate and interstate movement of the host plants. The infected area in that State was increased by the addition of 1 county, Bamberg, making a total of 17. Such areas in other States, as designated in the South Carolina regulations, now cover the entire States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, and Texas, 8 counties in Illinois, 1 in Missouri, 6 in North Carolina, 1 in Oklahoma, and 9 in Tennessee. Certification is based on the usual requirements of a disease-free county, or disease-free environs, or borer-free stock. The States which have similar quarantines or requirements in effect at the present time, according to the records of this Bureau, are Alabama, Delaware, Georgia, Louisiana, Mississippi, Oklahoma, and Tennessee.

The Atlanta headquarters for the phony peach disease project were moved from the State Capitol to the newly constructed Federal building in that city the latter part of March. The new address is Room 414 New Post Office Building, Atlanta, Ga.

DATE SCALE ERADICATION

Inspection was continued during February in the districts adjoining the infested area in the Coachella Valley. No scale was found. Inspection of the palms in the city of Palm Springs was completed. Due to the increasing popularity of the desert as a winter resort, many homes were built at Palm Springs and grounds planted with plants peculiar to desert regions. Large numbers of date palms were moved from the date-growing area in the Coachella Valley. Some moved in 1928 or prior to that time were found infested. There has been no evidence of scale spread from these infested palms except in one case where an offshoot from an infested palm was given to a neighbor.

Very careful scouting must be done to locate all dooryard plantings, and continued inspection is necessary as many of these palms do not receive proper care and make little growth. Unless offshoots grow properly, infestations may persist for a considerable time beneath the fiber where they cannot be found by ordinary inspection.

The last two properties to show scale in the Indio district were inspected and no scale was found.

In the Imperial Valley the Reed Garden was inspected and three infested palms were found. This garden is the only one in the entire date-growing area that is consistently showing scale.

Routine inspection was continued in and around the city of Phoenix in Arizona.

JAPANESE BEETLE, MOTHS, AND EUROPEAN CORN BORER

Japanese Beetle Activities

Reports, erroneously attributed to the U. S. Department of Agriculture, to the effect that the zero and subzero temperatures in New Jersey during mid-February had caused high mortality of Japanese beetle grubs, occasioned a number of newspaper editorials and items rejoicing over the alleged death of the pest. An item in a Union, N.J., paper headed "May Be End of Japanese Beetle" read, "Good News. The cold spell was a success. The Department of Agriculture has issued reports indicating that the bitter weather has either frozen the Japanese beetle, or has driven it so deep into the turf that it will never live to get to the surface again. That makes the coal bill easier to pay." A few days later the same paper published a cartoon depicting one of the temporarily employed road inspectors envisaging his summer's job inspecting automobiles and saying "Froze me right out of a job." Editorial comment in a Trenton, N.J., paper headed "Let's Hope It's True" said, "Reports from Washington indicate that the old adage about every cloud having a silver lining is applicable in an interesting way to the successive cold waves encountered this winter. Japanese beetle grubs, it appears, will either be frozen to death or dig so far into the turf that they will succumb before they can reach the surface and spring to maturity. Now, this puts a different complexion on our current sufferings. If these frigid blasts actually spell the demise of the beetle, we shall shovel coal, shrink beneath our ulster, and pile on the blankets with uncomplaining zest." Subsequent news reports published after consultation with the Japanese Beetle Research Laboratory and the New Jersey Department of Agriculture contradicted the predictions as to grub mortality. It was found that soil temperatures in the heavily infested zone did not drop below 27° F., whereas ground temperatures of from 10° to 20° are required for any large degree of grub destruction by freezing. Soil thermographs operated by the project in various sections of the Eastern States confirmed the fact that temperatures as low as 20° were not reached. It is therefore believed that the cold weather has had little effect on the grubs.

It has been quite definitely determined that the low temperatures killed nearly all peach buds in New Jersey. This will probably result in an extremely short peach crop this year. Apple and cherry buds were thought to have withstood the low temperatures with much less damage, although estimates were reported of from 50 to 75 percent kill of buds of certain varieties of late apples. In some cherry-growing sections orchardists estimated that from 25 to 30 percent of the cherry buds were killed.

Reconditioning of road patrol equipment now in winter storage at the New Cumberland, Pa., warehouse was in progress during February. The equipment involving the most work in preparation for its use this season are the roadside signs and their wooden standards. Termination of the road patrol work in the late fall usually finds the majority of the signs veterans of one or several encounters with automobiles or trucks whose drivers failed to notice the signs or skidded into them after making a quick stop. All signs are being repainted and relettered. There are four different types of signs used in the typical lay-out of a vehicular inspection post. A motorist approaching a station while en route to nonregulated territory first has his attention directed to the existence of the inspection point by a sign at the right side of the road reading, "Slow down." A few hundred feet farther on an easel sign is placed in the center of the highway advising the motorist to "Keep to Right." This easel is provided with an attachment for a red lantern. The warning lantern is in use during the hours the post is operated after dark. Kerosene bomb torches are placed in a line down the center of the road beyond the easel sign. Arriving opposite the inspection booth, the motorist is confronted with a sign in the center of the road reading, "Stop for Plant Quarantine Information." In addition there is a large sign on the side of the road near the inspector's shelter which briefly summarizes the quarantine regulations, as follows: "Warning. Stop For Quarantine Information. Federal and State Japanese Beetle Quarantines Prohibit the Movement Beyond This Point Of Plants, Shrubs, Cut Flowers, Soil, Fruits, and Vegetables. U. S. Dept. of Agriculture, Bureau of Plant Quarantine, L. H. Worthley, In Charge, Field Headquarters, 2101 N. 6th St., Harrisburg, Pa." For the benefit of motorists entering the quarantined zone past the post, "Slow Down" and "Keep to Right" signs are duplicated at the far end of the station. Present plans call for starting this season's road inspection activities during the first week in April. Accordingly the road equipment must be in readiness for transfer to the field by the third week in March. Limited funds for vehicular inspection work necessitate confining the established posts to 18 of the principal highways leading from the regulated sections. It is anticipated that 25 inspectors will be required to handle the work on these roads. Seven stations will be manned by 2 inspectors each. One inspector will be assigned to each of the remaining stations.

While awaiting open weather which will permit the movement of nursery stock, six Japanese beetle inspectors have been assisting in transit inspection work. G. W. Burke, an inspector connected with the New Haven, Conn., district office, has, since February 1, devoted a portion of each day to inspection of articles in transit through the freight transfer depot of the New York, New Haven, and Hartford Railroad at Cedar Hill, a suburb of New Haven. Usually from 3 to 4 hours daily are occupied in searching for contraband quarantined material at the Cedar Hill terminal. The remainder of the day is devoted to the regular Japanese beetle and gypsy moth inspection work in the New Haven district. Mr. Burke's work as transit inspector is

under the immediate supervision of H. J. Conkle. A. L. Price and F. H. Donnelly, employees of the State of New York previously engaged in Japanese beetle inspection work, have been assigned to full-time transit inspection in New York City under the supervision of Mr. Conkle since November 20, 1933. From the personnel of the Philadelphia office, G. W. Strabel and J. R. Cassel have been assigned to transit inspection work in the city during the lull in nursery and greenhouse inspection. In their transit inspection activities both of these men work under the immediate supervision of C. W. Lewis. Mr. Strabel has been engaged in full-time transit inspection work since February 7. His assignment alternates between the Pennsylvania Railroad freight transfer terminal at 52nd and Jefferson Streets and the Reading Railroad transfer depot at Wayne Junction. Mr. Cassel was able to devote all of his time to transit inspection work from February 14 to the end of the month. Another employee temporarily assigned to full-time transit work in Philadelphia is W. L. Caskey of the treating division, with former headquarters at Trenton. He has worked since February 8 at the terminal at 52nd and Jefferson Streets. H. W. Adams, a Japanese beetle inspector assigned to the regulated territory in the District of Columbia and adjacent sections in Virginia, began part-time transit inspection work on February 1 at the Southern Railway freight depot at Alexandria, Va. On February 7 he also began similar work on the platforms of the Railway Express Agency and the Southeastern Express Company in the District of Columbia. Most of Mr. Adams' transit inspection work is performed in the morning. His afternoons are required for visits to classified establishments for the purpose of inspection and certification of quarantined material. Most of these men will return to their regular duties as soon as the active nursery shipping season begins.

At the request of Leonard S. McLaine, Chief of the Division of Foreign Pests Suppression, Entomological Branch, Ottawa, arrangements have been made for the construction of 500 Japanese beetle traps for use by the Canadian Department of Agriculture. These have been secured at a cost of \$18.50 per hundred, a remarkably reasonable price compared with previous trap costs. The maker of the traps stated that he could produce them at the rate of 1,000 per day on a large order. Specifications from which the traps will be manufactured call for a cone-type trap developed by the Bureau of Entomology research laboratory subsequent to the cylinder trap now so widely used. Instead of the customary large cylinder which forms the major portion of the traps now in use, the new type of trap consists of a perforated cylinder of sufficient diameter and height to contain the bait bottle and its projecting wick. A removable cap covers the bait container. To this perforated cylinder are soldered the four baffle wings, which in turn are riveted to a funnel. At the bottom of the funnel is attached a screw top similar to a regular mason jar top. The trap handle by means of which the trap is hung from the trap standard is attached to the trap through holes punched in the tops of opposite wings of the baffle. The entire trap will be sprayed with aluminum paint, which is a less expensive coating than the green and white enamel previously used, and is apparently quite as effective in capturing Japanese beetles. It is Mr. McLaine's intention to distribute these traps this summer on the Niagara Peninsula, particularly in the vicinity of Niagara Falls, to determine whether any beetles have found their way across the border. Trapping activities during 1932 disclosed a small infestation in Niagara Falls, N.Y. Trapping in that city during the summer of 1933 resulted in the collection of only 2 beetles as compared to 13 in 1932. This reduction probably resulted from deficient rainfall during 1932. In view of the

proximity of the insect to the Canadian border, the Dominion Entomological Branch desires to take precautionary measures to forestall any establishment of the insect in Canada.

Curtailment of all possible overhead in view of reduced funds for the current fiscal year and further anticipated reductions for the fiscal year 1935 has resulted in termination of the lease on the former Rutherford, N.J., suboffice. Removal of the office from 171 Meadow Road, Rutherford, to the Lawrence Building, 13-15 Orient Way, in the same city, was accomplished by February 28. This transfer of quarters resulted in a saving of \$408 in annual rental. The new location is only a few blocks from the former headquarters, but is closer to the post office and business center. The office space is much smaller than that previously occupied, but with some readjustments is believed to be adequate. By relinquishing a portion of the garage storage space at the Glassboro, N.J., suboffice a further saving of \$400 in annual rental will be effected. Excess automobile and miscellaneous equipment in storage at these two suboffices will be transferred to the New Cumberland, Pa., warehouse early in March. During February, five truck loads of miscellaneous equipment were hauled from Rutherford to White Horse for subsequent transfer to New Cumberland.

Informational work performed during February included the reading of a paper on "Japanese Beetle Quarantine and Control Activities During 1933" by C. W. Stockwell at the annual meeting of the Eastern Nurserymen's Association held on February 2 in the Stacy-Trenton Hotel, Trenton, N.J. At the annual meeting of the Pennsylvania Nurserymen's Association held at the Penn-Harris Hotel, Harrisburg, on February 8, J. K. Gould, district supervisor in charge of the Japanese beetle quarantine activities in western Pennsylvania, read a prepared paper detailing the past season's Japanese beetle accomplishments in the State of Pennsylvania. Later, at the invitation of P. T. Ulman, secretary of the Central Plant Board, Mr. Worthley delivered a talk on "The Japanese Beetle Situation in Relation to the Central States" at the annual meeting of the Board held at Lafayette, Ind., on February 28. Mr. Hoyt also attended the meeting at Lafayette and visited the Harrisburg headquarters while en route to Washington on the return trip.

Noticeable out-of-season emergence of adult Japanese beetles in unclassified greenhouses in the environs of Philadelphia was first noted by inspectors early in January. Several greenhouse men reported finding beetles in their ranges during November and December. In the course of a score of routine inspection visits during January and February at 9 greenhouses in the Philadelphia district, a total of 232 adults was collected by inspectors. Eight of the establishments stated that their employees had been picking a few beetles daily for some time. The largest single day's collection was of 77 beetles removed on February 28 from roses growing in a greenhouse located in Bucks County, 25 miles from Philadelphia. Twenty-six beetles were collected on the same day in another rose house in Montgomery County, 17 miles from Philadelphia. Indications were that in these badly infested greenhouses emergence would be still heavier in March.

Twenty-six photographs showing various phases of the Japanese beetle and European corn borer quarantine and control activities, together with suggested titles for the pictures, were furnished to the University Extension Division,

University of Wisconsin, Madison. These photographs will be made into lantern slides and used in a set of educational pictures on "Citizenship and Government" to be distributed among the Wisconsin public schools, the University of Wisconsin, teachers colleges, and other educational institutions. In addition, a set of selected photographs illustrating typical plant quarantine situations was furnished to a firm of publishers of school and college textbooks in Newark, N.J., for use in illustrating a general science textbook to be published in the near future.

There were 8 inches of snowfall in Philadelphia on February 1, with additional severe snowstorms on February 19, 25, and 26. Each of these snowfalls tied up traffic and made automobile travel hazardous for several days. On February 9, according to newspaper report, the thermometer dropped to -22° F. This is said to be the lowest temperature recorded in Philadelphia in 97 years. The official Weather Bureau record for that day was -10° . Shipments from the Philadelphia seed houses, which usually proceed despite normal February temperatures, were delayed because of the severe conditions. A number of shipments of gladiolus bulbs were returned to the shippers because of being frozen while en route to the consignees. Several shipments of bulbs for stock were received in a frozen condition by a large seed house.

Nursery activities were virtually suspended in New Jersey for the entire month of February. Even shipments from greenhouses were not considered advisable. In nurseries it was impossible to dig anything from the frozen ground. Sand pits were similarly prevented from shipping. The principal articles shipped during the month were dahlia tubers forwarded to southern points. These tubers were packed in a manner to protect them from the prevailing low temperatures. At the end of February it was anticipated that temperatures and soil conditions would permit a decided increase in nursery and greenhouse activities by the middle of March, requiring temporary employment of additional inspectors.

Establishments added to the classified list as a result of the extension of regulated territory effective December 1, 1933, number 25. Of this total 2 are located in Virginia, 14 in Maryland, 3 in New York, and 6 in Maine. Under the extension of area in Maryland, the Horticultural Field Station of the Department at Beltsville was included within the section under restriction. The field station has been assigned a class I, or uninfested status. At the end of February there were on the classified list 1,856 class I establishments, 499 class III, or infested nurseries and greenhouses, and 17 nurseries having a "split" classification, including both uninfested and infested sections.

Responsive to a request by A. C. Fleury, Chief of the Bureau of Plant Quarantine, California Department of Agriculture, a short 10-minute introductory talk was prepared to be read previous to the showing of the 4 reels of Japanese beetle moving pictures, which Mr. Fleury is arranging to secure from the Office of Motion Pictures of the Department. It is the intention of the California authorities to show the reels at a number of different points in the State in connection with meetings to which both growers and State quarantine inspectors will be invited.

In three instances recently, high school students who have observed Japanese beetle quarantine posters in post office lobbies have written in for copies of the

shipper's guide and notice of quarantine. These have been requested for use in reports to be made in zoology and biology classes. Replies have been made that the shipper's guide and quarantine notice are hardly the type of publication that would be of interest to high school classes. Instead publications detailing the insect's life history and measures practiced for its control have been furnished.

Printed copies of Quarantine No. 48 (10th Revision) with supplemental rules and regulations (12th Revision), effective December 1, 1933, were received from the Government Printing Office on February 20. Distribution of the quarantine notices to those on the project's mailing list began immediately upon arrival of the publications. Copies of the quarantine are furnished to the postmasters and superintendents of mail in the various post offices, suboffices, and postal stations throughout the regulated area through the office of the Third Assistant Postmaster General.

On five occasions during February snowfall in New Jersey made it necessary to telephone various establishments requesting them to postpone inspection of quarantined stock due to the inspector's inability to reach the establishment because of impassable roads. The White Horse district office kept in frequent communication with the State Highway Department and State Police to learn of the clearing of the roads. As soon as the highways were sufficiently cleared for automobile travel, the inspectors proceeded on their assignments.

In response to a request from the Education Department of the Children's Museum of Boston, literature concerning the Japanese beetle was furnished for use in talks on trees and tree pests to be delivered to teachers visiting the museum at Olmstead Park, Jamaica Plain, Mass. Cards illustrating the insect in colors and describing its life history were furnished for distribution to the teachers in attendance at the lectures.

Visits were made during February to the nurseries, greenhouses, and other plant-growing establishments in the magisterial district of Brookland, Henrico County, Va. This district was added to the regulated zone with the recent revision of the regulations. Such dealers as will require regular certification were classified, and other occasional shippers received complete quarantine information and literature.

Most of the work in preparation for soil sampling of lead-arsenate-treated nursery plots was completed during February. Detailed information has been compiled concerning all treated plots and all maps of the areas have been brought up to date. Remodeling of the soil samplers, previously described, has been finished. As soon as soil conditions permit, collection will be begun of the approximately 500 soil samples from nursery plots containing growing plants.

Of the seven temporarily employed New Jersey State Japanese beetle inspectors furloughed and reemployed on the Dutch Elm disease project in the State, five are still engaged in this work. Two of the men have returned to duty at the quarantine suboffice at Glassboro, N.J.

Corn Borer Certification

Seasonal decline in shipments of articles subject to State quarantines on account of the European corn borer has permitted a number of Federal corn borer inspectors to devote considerable time to transit inspection work. After a brief training period under J. M. Corliss, of the transit inspection division, C. O. Larrabee began transit inspection work in Detroit, Mich., on February 17. Only such time will be devoted to the inspection work in the freight and express stations of Detroit as can be spared from Mr. Larrabee's regular duties in connection with Federal corn borer certification in eastern Michigan. Starting shortly after the middle of February, O. P. Norris began transit inspection in Cleveland, Ohio. He will continue, however, inspection and certification for the corn borer in the Ohio-West Virginia district. Mr. Corliss visited the Harrisburg headquarters on February 17 to confer regarding the work of these two inspectors. H. V. Hotchkiss, who has been engaged in corn borer certification work in northern New Jersey and Long Island, was preparing during the latter part of February to turn over his certification work to T. V. Heald, preparatory to starting transit inspection work in New York City under H. J. Conkle early in March.

Gypsy and Brown-Tail Moth Quarantine Enforcement

Snow, high winds, subzero temperatures, and impassable roads continued to feature reports of the district gypsy moth inspectors during February. In Maine there has been so much snow and zero weather that in some districts the number of shipments certified has been fewer than in any February for the past 10 years. Shipments of all forest products have been delayed on account of the deep snow. Teams have been unable to get around in the woods. One inspector states that never in the history of the State has there been a winter like the present. For weeks at a time the temperature was below zero, several times reaching -40° F. As soon as road conditions are favorable pulpwood, lumber, and telephone poles will begin to move. There is plenty of pulpwood to be shipped when it can be taken from the woods. At the end of the month the snow was rapidly melting in some sections. Heavy rains helped in its disappearance. Decreases in inspections have in some instances given the inspectors opportunities to survey tourist camps and camping grounds for moth infestation. In Vermont and New Hampshire, severe snowstorms, accompanied by temperatures of from 20° to 45° below zero, were followed by windstorms that drifted the snow and completely blocked the roads. The woods were covered with 4 and 5 feet of snow. In certain districts the roads were so impassable that only the trunk lines were opened by the snowplows. Side roads in these sections will not be opened for automobile travel until spring. Reports from Massachusetts state that the present winter has been one of the coldest on record. In most severe winters the temperature dips once or twice well below zero, but this winter frequent periods of subzero temperatures have occurred. Throughout the gypsy moth infested areas temperature readings of from -20° to -50° have been recorded. These began in December and have continued intermittently until the latter part of February. In most cases these low temperatures were accompanied by strong winds, which increased the killing power of the cold so far as mortality of gypsy moth eggs is concerned. Since, as previously reported, the killing of gypsy moth eggs begins at -20° F., practically all of the moth eggs that were deposited above the snow should be killed. Usually eggs deposited beneath the snow

line survive severe winters, but this year's frequent cold spells with varying thicknesses of protective snow covering have offered less protection than usual, thus permitting a higher rate of egg mortality than is usually expected. In the Westerly, R.I., district ice and low temperatures prevented the granite quarries from removing any stone, and affected the movement of other quarantined products. It was impossible for the lumbermen to even haul out hardwood railroad ties from the woodlots. Extremely cold weather and snowstorms in the Middletown, Conn., district slowed up all business activity. Orders for stored nursery stock will be shipped as soon as the weather moderates.

Immediate prospects for spring business are reported as not very encouraging by many of the granite firms in the Barre, Vt., district. Very few of the larger quarries report the usual amount of advance orders for spring delivery. It is the opinion of the district inspector that 90 percent of the large and small firms in his district have not received the normal amount of orders usually on hand shortly after February 1. Many of the dealers feel that there will be a rush of orders during April and May. Present indications are that not many dealers in cemetery memorials are laying in stock as usual. Fewer shipments were certified during February for movement from the Burlington, Vt., district than in any month for several years. Severe weather and deep snow partly accounted for the slack trade conditions. Orders for spring delivery of nursery stock are described as scarce by nurserymen in the Newport, R.I., district. The spring shipping season usually opens in Newport County about March 20. At the end of February the nurseries were covered with a heavy blanket of snow. Open weather, permitting digging of nursery stock, will undoubtedly be later this year, since the present winter in Rhode Island has been the most severe for 20 years. In the Willimantic, Conn., district a general improvement is looked for in the shipment of reels, poles, and other forest products. The electric companies are said to be planning considerable work for the coming spring.

Considerable interest was attached to one of the February inspections of the gypsy moth inspector in the Rutland, Vt., district. Members of the 1218th CCC company stationed in the Proctor-Pitkin State Forest Park at Proctorsville, Vt., recently forwarded a miniature rustic furniture set to President Roosevelt's little granddaughter, "Sistie" Dall. The set comprises a table, 4 chairs, and a tiny crib, all strongly constructed in mission style of Vermont golden birch. Each piece is said to be able to support the weight of a full-grown man. Accompanying the gift was a letter typewritten on a sheet of specially prepared birch bark. This letter expressed the boys' appreciation for being relieved from unemployment in New York City and transferred to the comforts and enjoyment of the forest camp. Some 20 of the 216 boys stationed at the camp constructed the play set in their leisure time after working in the woods during the day. The woodland present was sent to Robert C. Fechner, CCC director, who consented to present it at the White House in behalf of the CCC workers. The handicraft instructor, a native of Vermont, has also taught the boys how to construct heavy, full-size sets of rustic furniture with which to furnish their barracks and officers' quarters.

Inspections of quarry products from the Lebanon, N.H., district have seriously declined during the past 2 years. Quarries at Roxbury and Rochester, Vt., have not shipped as many cars during the 2-year period as they formerly moved in 1 month.

A quarry at Bethel, Vt., is at present inactive. A plant at South Royalton, Vt., which was destroyed by fire sometime ago has not been rebuilt. There have been no shipments of garnet rock from a mine at Danbury, N.H. About the only product for which there has been no noticeable decline is feldspar, quarries producing which are located at Cardigan and Wilmot, N.H. In the process of quarrying feldspar, deposits of flint and beryl are found. The flint rock, though less valuable than feldspar, is marketable. Beryl, a comparatively rare mineral, is quite valuable, but unfortunately is found only in small deposits. This mineral is the principal source of glucinum or beryllium, a metal used in light alloys of aluminum and magnesium, and so-called "electrical copper." This rare metal is also especially desirable for use in the manufacture of springs. On February 10 a small shipment of 1,150 pounds of beryl, which had accumulated since last fall in the process of quarrying feldspar, was shipped from Cardigan, N.H., to Philadelphia, Pa.

Ability to ship pine edgings without detailed inspection of each piece acts as an incentive for a lumber yard in Keene, N.H., to keep their yard free from gypsy moth infestation. Individual inspection of each piece of edging would consume so much time as to be impracticable. The lumber company is obliged, therefore, to keep their entire premises free of infestation if they desire certification without inspection. Some of the material now being shipped to a consignee in Brooklyn and New York City has been in the yard for at least 2 years. The consignee sells the wood in small boxes or bundles for kindling wood. Since the edgings are considered so much waste, and their sale a clear profit, the firm is only too glad to maintain a moth-free condition in their yard. About 50 percent more pine edgings were shipped during January and February of this year than in the same period of 1933.

Demand for cordwood from the Greenfield, Mass., district was spurred by the extremely cold weather. Most of the shipments proceeded from the lightly infested gypsy moth area to nonregulated points. The unusual depth of snow made it difficult to get out this fuel, since many woodlots are at considerable distances from the main highways. Even the principal highways were badly blocked with snow during February. In traversing the forests with 3 feet of snow on the ground, the inspector frequently found it necessary to use snowshoes. Horses are used to haul the wood to the main highways, where the fuel is loaded on trucks for transportation to destination.

Good intentions on the part of a florist in Rowley, Mass., were necessarily defeated when a large wreath of spruce, bayberry, and black alder was intercepted without a gypsy moth certificate while en route to President Roosevelt. Investigation disclosed that the florist does a local business, so did not think of the gypsy moth quarantine when he dispatched the Presidential gift. The manner of construction of the wreath was such as to render impracticable its inspection and forwarding by the transit inspector. It was therefore reluctantly returned to the consignor.

Nurserymen in the vicinity of Hartford, Conn., report that the unusually severe winter of the past 3 months has greatly damaged their field-grown stock. One nurseryman reported a complete kill of peach buds, resulting in the loss of 150,000 trees. Buds of some varieties of apples were damaged to the extent of 85 percent, while other apple varieties appear to be unaffected. Mortality of pears is said to vary from 0 to 50 percent.

Since the Harrisburg headquarters is outside the gypsy moth regulated areas, all moth egg clusters observed by district inspectors in the course of their examination of forest, nursery, and quarry products are, after creosoting and removal, forwarded to the Boston office for confirmation of the determination and recording.

At their annual meeting in February, the Rhode Island Nurserymen's Association recorded themselves as opposed to further liberations of cottontail rabbits by the State Game Commission.

Quantities of shims and rail braces were shipped from the Bath, Maine, district during the month. These have been used by the railroads in track bracing. Rains followed by freezing weather caused heaving of the tracks, requiring shims and braces to restore them to a level condition.

MEXICAN FRUIT FLY

The superiority of the new type glass traps over the old wire traps was further evinced during February. In the neighborhood of 500 of the wire traps were reconditioned and placed in the groves, in the majority of cases in the same groves in which glass traps were operated. No Anastrepha of any kind were taken in the wire traps, while 51 A. ludens and 72 specimens of other species of fruit flies were taken in the 5,381 glass traps operated.

Two specimens of ludens were taken on the same day in separate traps in each of two groves, in two others two fruit flies were taken on different days, and in the remainder only one fly was taken during the month. The majority of the flies taken this season have been caught near the outside of the groves, indicating considerable drifting about. Previous observation of larval infestations tended to establish the belief that the flies stayed rather close to one locality.

There were fewer specimens of Anastrepha, other than ludens, taken in February than in January. Less than half as many A. serpentina were taken as in January. Whether or not this decrease means that this species is leaving the citrus groves and going to the brush in search of a native host is not known. No native fruit has yet been found infested with larvae of any of the Anastrepha with the exception of pallens, which feeds in a native Bumelia. Traps placed in a patch of these shrubs south of Donna resulted in the taking of a short-tailed "X" species, which is very close to ludens. Of interest was the taking of an adult A. fraterculus in Reynosa, Mexico, opposite Hidalgo, and the taking of an adult fraterculus in Brownsville. This latter was identified by the National Museum as Anastrepha species "Y" (Mexican variety). This species "Y" is very similar to the fraterculus commonly taken on the west coast of Mexico.

Inspection of fruit in the Texas groves for larval infestation gave negative results throughout the month.

Weather conditions permitted the operation of the power spray rig on 17 days during the month. The nicotine-molasses spray was applied to 13,615 trees on 34 properties; 3 of these properties were sprayed by the owners who owned their own power sprayers. An average of about 1 gallon of the spray was required to give a complete coverage to each tree.

A considerable number of groves had been cleaned of the commercial crop of fruit by the middle of the month. Accordingly, trap inspections were made only once a week rather than at semiweekly intervals, and this saving in time was utilized in making tree-to-tree inspections. These tree-to-tree inspections are made for the purpose of seeing that no ripe or "off-bloom" fruit is left on the trees in which the flies might feed during the host-free period. A considerable saving will be effected by utilizing the inspectors in this work rather than waiting until the end of the harvesting period and employing laborers to make the tree-to-tree inspections. This work was made easy by the scant foliage on the trees, but will become increasingly difficult as the trees put on the spring flush of growth.

The importation of fruit into Matamoros was fairly light during February. Only one carload of oranges was received from Montemorelos, and the express shipments from the State of Michoacan were less than during January. The inspection of oranges on arrival and on the stands yielded 14 larvae of A. ludens, while 15 larvae of A. striata were recovered from guavas. The operation of traps in Matamoros resulted in the taking of 2 adult ludens. Negative results were obtained from 20 traps located in 7 ranches between Matamoros and Rio Rico. Due to the abominable condition of the roads on the Mexican side of the river it was possible to work these traps only twice during the latter part of the month. The operation of traps in Reynosa resulted in the capture of 1 specimen of fraterculus; however, an adult ludens was taken in a trap in Hidalgo, directly across the river from Reynosa.

The shipment of fruit was fairly brisk throughout the month, with trucks hauling the greater part of that moved. Some 660 carloads were shipped of which approximately 409 were carried by trucks. A total of 466 master permits were issued for interstate shipments by truck, the drivers declaring their intention of taking the fruit to 13 States. The supply of fruit became limited during the month, causing a number of the independent packers to close their plants for the remainder of the season. Truckers complained of flooded markets, but continued to load out even in the face of a 10¢ a bushel increase in the price of fruit.

PINK BOLLWORM

Field inspections were carried on in the Thurberia weevil area throughout the month, without any specimens of either the Thurberia weevil or pink bollworm being found. As plowing was progressing rapidly, it was seen that the entire area could not be inspected thoroughly; therefore, a supply of bollies was collected from the top crop for examination after the fields had been plowed. It will be

recalled that it was from material from the top crop that the light infestation of the *Thurberia* weevil was discovered last season. The bollie material will be inspected during the coming month. Present indications are that there will be a considerable increase in cotton acreage in the *Thurberia* weevil area this coming season, which will probably amount to over 5,000 acres, as compared with only a few hundred acres last season.

Laboratory inspections have gone forward satisfactorily during the month. At San Antonio green bolls from Louisiana have been inspected. At Lake City, Fla., bollies and green bolls collected from the regulated areas of Florida and Georgia, and also from territory just outside these areas, are being examined. No specimens of the pink bollworm have been found in any of the material examined to date.

Preparations for continuing trap plots of cotton in the Big Bend of Texas again this season are actively under way. The cotton will be grown in hotbeds, and as soon as all danger of frost has passed the plants will be transferred to the fields. About the middle of the month 5,300 cups were planted, and an additional 2,500 cups were planted at the end of the month. It is planned to have about 25 field plots of 200 plants each. Last season more plots were used, but only 100 plants for each plot. These were found to be too small; consequently, this season, a smaller number of plots with more plants per plot will be used, and these concentrated in the heaviest infested fields. In addition to these plots the owner of the La Junta farm has agreed to plant 1/2 acre of cotton as soon as weather will permit, and in Brewster County 2 half-acre plots will be planted. The blooms will be gathered from these 3 half-acre plots the same as from the smaller ones. All of the farmers in the Big Bend have agreed not to plant any field cotton prior to April 15. This will enable the peak of moth emergence to be over before the cotton begins fruiting. Assurance has been given that no cotton will be planted on the Mexican side of the river before April 9, so there will be a fairly uniform planting date for both sides. It is necessary for the Mexican farmers to begin planting a little earlier, as all of their irrigation is by gravity, whereas on the American side practically all of the farmers have their own pumps.

According to the Mexican agricultural inspector at Ojinaga, there is to be a considerable increase in cotton acreage in two sections about 130 miles up the Conchos River from Presidio. This new area is being developed by the Mexican Government for repatriates. The land is said to be especially fertile, and is being sold very reasonably on long-term agreements. It is reported that there will be from 12,000 to 15,000 acres of cotton this coming season. One gin was operated last season, but it now appears that another gin and an oil mill will be constructed.

The sterilization of planting seed in the regulated area of southern Georgia is now under way. The necessary labor is furnished by the State, and the work is being done under our supervision. At the present time a small portable sterilizer is being used. One of the ginners is having his regular sterilizer installed at his gin, and he says that the State is welcome to use it as soon as it is completed. This will enable the men to complete the job much sooner, due to the larger volume of the machine.

The eradication of wild cotton in southern Florida made especially good progress during the month. There were some rains, which made outdoor work rather

disagreeable, but did not cause any appreciable loss of time. The recleaning of the western coast from Naples northward was practically completed. From some 84 colonies, covering 216 acres, 786 mature, 133,019 seedling, and 2,225 sprout plants were removed. During this recleaning the men were constantly on the look-out for new colonies, and 6 were found that covered $4\frac{1}{4}$ acres, and consisted of 457 mature and 2 seedling plants; these were also removed.

Most of the clean-up on the west coast has heretofore been devoted to the above area because of the fact that it is traversed by highways, which makes the danger of spread much greater. During the month, however, the original clean-up of the coast line south of Naples, in Collier County, was begun. The mainland of Collier County is bordered by the group of keys known as the Ten Thousand Islands. Cotton is being found principally on the outside keys bordering the Gulf, and on those along creek and river banks and shore line. The cotton along the rivers usually occurs on a narrow strip of the banks. A few feet back of the river bank mangrove swamps occur. In going through these mangrove swamps, ridges high enough to support the growth of wild cotton are occasionally found. An unusual feature of these ridges is that they seem to occur at an angle of about 45 degrees to the river instead of being parallel.

In the Cape Sable area practically all of the territory gone over last winter and spring had been recleaned. There was an enormous number of seedling plants at this time, and many of these had mature cotton. In removing these plants extreme care was used to prevent as much shedding as possible. The areas just cleaned were the most accessible, so that hereafter the work will be more difficult. The recleaning of the mainland keys, from Key Largo south to Lower Matecumbe, has progressed satisfactorily. Due to the nature of the land the two inspectors assigned to this work are using small crews and giving them close supervision. During the month of February all of the above clean-up covered about 1,600 acres, from which were removed 19,272 mature, 548,561 seedling, and 88,735 sprout plants. Over half of the above plants were removed from the Cape Sable area.

The program of scouting for wild cotton in new areas along the mainland, at the head of Florida Bay, was continued throughout the month. During this period 116 acres of land were located, on which it is estimated 10,600 large plants are growing. One day of the month was devoted to a trip by motor car along the Florida East Coast Railway from Key Largo Station to Homestead. This particular area is inaccessible by either boat or automobile. As a result of the trip it was found that this area does not appear to be favorable to wild cotton growth, as most of it is very low and is submerged a good portion of the year.

The program at Chapman Field has been continued. During the month 825 blooms and 36 bolls were examined from the cotton plats without any signs of the pink bollworm being found.

PREVENTING SPREAD OF MOTHS

The work of the scouting crews in the field has continued to be affected by the severe weather experienced almost universally over the area in which gypsy moth work is being performed in New England and, to a lesser extent, in Pennsylvania. Numerous severe storms in February have increased the amount of snow on the ground, and in some localities it has been decidedly difficult for the scouts to make any progress, even with the aid of snowshoes, because of the fact that the newly fallen snow was too light to give any support to the shoes and the men sank into it for over a foot. In general, it may be said that the winter, which is now almost passed, has been the most severe of any that has been experienced by the men employed on gypsy moth work. This statement is borne out by the fact that many localities reported snowfall much in excess of anything that has ever been recorded, and town after town has recorded drops in temperature lower than have been experienced for very many years.

For some time five crews of scouts have been working in five towns in northeastern New York, just west of Lake Champlain. All these towns have been scouted and no gypsy moth infestations were found. The crews have been transferred to Vermont. In addition to nearly 56,000 acres of woodland in these New York towns, 420 miles of roadsides and over 147,000 individual trees, scattered through more open country, were examined.

Crews working in Vermont have been engaged for some time now in scouting towns in the Connecticut Valley and those in the vicinity of Lake Champlain, after having spent nearly all of their time since the start of the fall scouting in the higher towns in Vermont so that as much as possible of the highland territory could be completed before the advance of extremely severe winter weather. In the Lake Champlain region, in towns bordering on the lake, there are considerable areas of swampy land which are inaccessible in ordinary years. This year most of these swampy areas have been frozen over for the first time in a number of years and it has been possible to scout them--work which could not be undertaken unless they were well frozen.

In western Massachusetts there is an area in two or three towns that appears to be more subject to damage from ice storms than any other section in which gypsy moth scouting is performed. Large sections of woodland in the above-mentioned towns are perfect tangles of broken limbs and fallen trees. Scouting under such conditions is decidedly difficult and sometimes not thoroughly satisfactory. In one of the towns, also, there are considerable areas in which numerous chestnuts have been killed in past years by chestnut blight. These dead trees have much loose bark, and oftentimes gypsy moth egg clusters are found underneath these strips of bark. The scouts can only be certain that no egg clusters have been missed if they stop to pull off all of the loose bark from trees and examine it. In western Massachusetts, also, there are areas thoroughly overgrown with laurel. These sections are practical tangles of interwoven laurel branches which are almost impassable. In their way these laurel areas are almost as difficult obstacles to overcome as the tangles of "bull-briars" which have been found in other sections being scouted.

Crews of scouts in Connecticut have been working in towns both inside and east of the barrier-zone section. Toward the end of February there were 34 crews of scouts engaged in examining woodland, roadsides, and scattered trees in that State. Connecticut, in common with the other States of New England, has been subjected to an exceedingly severe winter, although temperatures have not been quite so low as those reported from more northern localities. Snowfalls have been heavy, and numerous towns exhausted their appropriations for snow removal early in the year, so that it was impossible to give their roads the proper attention in February. In numerous cases the final storms of that month blocked country roads completely and these will only become passable when the snow has had a chance to thaw with the advent of warmer weather.

In Pennsylvania crews of scouts have continued working in towns just outside the area of known infestation for the purpose of determining accurately the exact limits to which the gypsy moth has spread. The determination of these infestation limits was necessarily postponed from last year, as before they could be found the season was so far advanced that spraying had to be commenced, which forced the discontinuance of scouting. The whole month of February has been one of severe cold and storms in Pennsylvania, and these conditions have been particularly hard on the men, many of whom were not accustomed to outside work. Scouting work, performed during the month, has been in mountainous and heavily wooded country in which considerable areas have been set aside by the State for game refuges. In the more heavily infested sections of the area in which the gypsy moth is present in Pennsylvania large acreages of badly overgrown sections of woodland have been encountered. In general, these are tangles of brush, dead trees, and broken down limbs in which satisfactory scouting is next to impossible. Crews have been placed in such areas to cut out and burn all brush and dead and worthless trees so that the areas may be put in satisfactory condition for control work. These cut-over areas are, in many cases, infested to a considerable extent, and during the course of the cutting and burning operations many gypsy moth egg clusters are destroyed. It is estimated that over 300,000 gypsy moth egg clusters have been destroyed by these operations.

Effective March 1, 1934, the State of Pennsylvania has extended the area under quarantine on account of the gypsy moth to embrace additional towns in which infestations have been discovered. The discovery of infestations beyond the area first placed under quarantine on March 15, 1933, has caused the extension twice. In December 1933 19 square miles were added to the original 409 square miles of area quarantined. The most recent extension, which becomes effective March 1, adds 278 square miles to the quarantined area, making a total of 706 square miles now under State quarantine. Products shipped or transported from this area are inspected and certified as free from infestation before they are moved. Such products are quite diverse in character but, in general, they consist of lumber, mine props, various other forest products, and miscellaneous items such as junk metal, etc., with a few shipments of nursery stock.

Inspection and certification of forest and other quarantined products originating in the gypsy moth infested zone of northeastern Pennsylvania require the full-time assignment of 7 inspectors of the Pennsylvania Bureau of Plant Industry. Requests for inspections have increased considerably due to the additional townships recently placed under restriction.

Infestations of gypsy moth totalling 72 egg clusters were found in the course of inspection of car stakes and blocking to accompany 5 shipments of granite from Concord, N.H. These shipments were destined to Washington, D.C., and points in New York State.

Out of 67 tourist camps inspected in the Bath, Maine, district, 20 were found infested with the gypsy moth and 2 with the brown-tail moth. These inspections netted 354 gypsy moth egg clusters and 25 brown-tail moth webs.

Collections of gypsy moth egg clusters were made on four occasions during March and the clusters forwarded to C. W. Collins, in charge of the gypsy moth research laboratory at Melrose Highlands, Mass.

Chestnut leaves and twigs of a species which the shipper claims is immune to the chestnut blight were certified at Boston for shipment to G. F. Gravatt, senior pathologist of the Bureau of Plant Industry, Washington, D.C.

MEXICAN FRUIT FLY

Following the taking of a considerable number of adult Mexican fruit flies during the early part of March, a determined effort was made to locate any larval infestation that might exist. Practically every grove having any quantity of fruit was given a close inspection, and in addition all fruit taken in the tree-to-tree inspection of 1,854 groves was cut and inspected. All larval inspections gave negative results. With one exception, all previous larval infestations have been found during the spring months, and the inability to locate a larval infestation this spring would indicate either that the fly population is less than in some previous years, or that the trapping and spraying operations are decidedly successful in preventing a larval infestation of the fruit. The great majority of the female flies taken this season had not developed eggs in the ovaries, indicating that they were attracted to the traps shortly after emerging from the pupae. Where the grove was sprayed within a few days from the time of taking the adult, it is reasonable to believe that any flies not attracted to the traps would be killed before having an opportunity of ovipositing.

During the fiscal year to the end of March, 231 adult A. ludens were trapped in 154 groves. More than half of these, or 143, were taken during March. In addition to the ludens, specimens of A. fraterculus, A. serpentina, A. pallens, A. "X" species, A. "Y" species, and T. curvicauda were taken in the traps during the month. Of particular interest was the trapping of 3 female ludens in the brush in 3 widely scattered locations. Whether this means that this species is feeding on

a native host or whether the lack of fruit in the citrus groves is forcing them to wander about in search of material for oviposition, is not known. It is hoped that some light will be thrown on this question by an intensive trapping and inspection program that will be carried on in the brush during the next several months.

The State-operated power sprayer was in operation 22 days during the month, during which time 13,489 trees in 28 properties were treated with nicotine-molasses spray. With the rate infestations were being turned up during the early part of the month, it was realized that the one sprayer could not be expected to reach the groves within a reasonable time after finding the infestations. Accordingly, a representative of the State Department of Agriculture met with the Commissioners' Courts of Cameron and Hidalgo Counties and secured appropriations to pay for an additional power sprayer, and also to pay for part of the traps purchased last fall. The new sprayer is expected to be in operation during the first part of April.

The operation of traps on the Mexican side of the river from Matamoros to Reynosa resulted in the taking of 3 A. ludens, 1 A. striata, and 1 A. pallens in Matamoros. The other traps gave negative results. The specimen of striata was the first ever taken in Matamoros despite the fact that the city has been intensively trapped during the past 4 years. Larvae of striata are recovered occasionally from guavas imported to the market in Matamoros, but seemingly this species has never been able to establish itself in the numerous guava bushes growing in Matamoros.

The shipment of mangoes from the southern part of Mexico started during the early part of the month, with 26 boxes of this fruit reaching Matamoros. From these, 18 larvae of A. ludens were taken and forwarded to Mexico City. While the Mexican inspector received no instructions concerning the shipment of mangoes to the border, a number of merchants in Matamoros received notice from the dealers in Michoacan that the shipment of mangoes to Matamoros was strictly prohibited by the Mexican Government and that they would be unable to fill future orders for mangoes.

The citrus crop of the Valley was practically harvested for this season by the end of the month. Orders were received on the 24th and given to the industry that the harvesting period would end with the close of April 5. This action was deemed advisable due to the taking of rather large numbers of adult fruit flies and because the full extension granted at the opening of the season, when a 15,000-car crop was indicated, was not needed. The industry as a whole was anxious to bring the season to a close. Due to the good price prevailing for fruit throughout the month, groves were stripped clean of fruit. Very little off-bloom fruit has been observed on the trees, and it is expected that the Valley will enter the host-free period in better shape than at any time during the past several years. Shipments were steady throughout the month with very little of the end-of-the-season rush in getting fruit out. The majority of the fruit shipped during the month was hauled by trucks which have, throughout the year, handled more fruit than the railroads. A daily average of 68 fruit trucks passed the road station during the month. The total shipment of fruit for the season will probably be in excess of 4,000 cars, rather than 2,000 as was estimated immediately after the hurricane of September 4.

PINK BOLLWORM

Weather conditions were more favorable in southern Florida during March than during the previous month, and as a result the eradication of wild cotton went forward very rapidly. All cotton in the area from Naples, in Collier County, northward has been removed. This work included not only the recleaning of areas formerly cleaned, but also the first clean-up of many new colonies which were inaccessible last season or which had not been located. Considerable progress has also been made in that part of Collier County south of Naples which is being cleaned for the first time. There is still considerable work to do in this area before all of the known cotton will have been eradicated.

On Cape Sable the area cleaned has been extended considerably. At the close of the month the crews had worked inland to the prairie and hammock bordering White-water Lake. To reach this area it was necessary for the men to cut automobile trails through considerable growth so that the laborers would not have to walk so far to and from work. Some 25 miles of trails have been made this season. It was also necessary to build a number of bridges over canals. These bridges were constructed without any cost to the Department by using driftwood, logs, and trees. The inspectors have exhibited considerable engineering skill in this trail and bridge work. One of the crews at Cape Sable began the clean-up program on keys in Florida Bay adjacent to Cape Sable. By the end of the month those keys accessible by boat from the mainland had been cleaned and a small camp was established on one of the keys as a working base to reach those more distant from the mainland.

The reclean-up on the mainland keys, from Key Largo southward to Lower Matecumbe, has progressed very well. Several small keys adjacent to the mainlands have been completed. In this area a good many plants are found growing in cracks and crevices in the rocks, and it is almost impossible to dig out the plants by the roots in such locations. The eradication of such plants is being undertaken by chemical treatment, sodium arsenite, at the rate of approximately 2 pounds of dry sodium arsenite gray to a gallon of water, being used. This liquid is applied by means of a long-spout oil can equipped with a valve. Preliminary experiments made last fall indicate that this method will prove satisfactory.

The weekly examination of blooms from the cotton plots at Chapman Field was made throughout the month. A total of 1,045 blooms and 23 bolls were examined with negative results. There was not sufficient time to examine any hibiscus blooms.

The sterilization of planting seed in the regulated area of southern Georgia, mentioned in the last News Letter, has been completed. A total of $91\frac{1}{2}$ tons were treated, and a considerable quantity of this seed has already been planted. A farmer recently told one of our inspectors that he had secured a perfect stand, and was thoroughly convinced that sterilization did not injure the germinating qualities of the seed.

As part of their program, and to assist in eradicating the pink bollworm, the Agricultural Adjustment Administration has established a no-cotton zone to include the area where infestation was found in southern Georgia last fall. At the request of the State Entomologist of Georgia a small plot of cotton will be planted

in each of the two fields where infestation was found. The blooms from this cotton will be picked and inspected daily. This will give information as to the continued presence of the insect and also serve as a trap for any moths which might emerge and lay eggs.

The State of Texas has made arrangements to sterilize planting seed in the new area in West Texas where infestation was found this past season. Some 21 sterilizers will be installed at various gins throughout the area. Each machine will be supervised by one of our inspectors to see that the seed is satisfactorily treated. By the end of the month several of these machines had already been installed and were in operation, and the remaining ones will be ready in a short time.

Preparations for the trap-plot work in the Big Bend have gone forward satisfactorily. The hotbed cotton is in a healthy condition and is growing rapidly, the plants now being about 5 inches in height and containing from 4 to 6 leaves. As the plants developed they were gradually thinned to where the two healthiest plants were left in each cup. By the end of the month the field plots had been prepared and with the exception of water everything was in readiness to begin transferring the plants to field plots. This transplanting will be done the first of the coming month. The two half-acre plots in Brewster County are growing nicely. One of these plots is well protected, and cotton came up to at least a 95 percent stand. The other plot is not so well protected and does not have such a good stand; however, it does not appear that any replanting will be necessary. The recent cool weather did not extend to this area, and if none is experienced in the future this trap cotton will be well in advance of the main crop. A few farmers requested permission to begin planting a little early, but upon being told that this might interfere with the program, they did not insist, and it now appears that no cotton will be planted prior to April 15.

Laboratory inspection at San Antonio and the various field stations has gone forward as usual. Last fall some green bolls were collected in the regulated area of West Texas and New Mexico to make a comparison between the cost and efficiency of gin-trash inspection as compared to boll inspection under laboratory conditions. Several specimens of the pink bollworm were found in some of these bolls, but with this exception the results of laboratory inspection were negative. Because of the need of inspectors to supervise machines in connection with the sterilizing of planting seed in the new area of West Texas, the San Antonio laboratory has been temporarily closed. As soon as this program is completed the men will return to San Antonio and resume laboratory inspection.

PREVENTING SPREAD OF MOTHS

Effective March 1, 1934, the State of Pennsylvania extended the area which they had placed under quarantine on account of the gypsy moth to include additional townships in which infestations have been discovered since the start of the present scouting season. Although every effort to discover the farthestmost

limits of the infested area were made last year, the magnitude of the task rendered its completion impossible. Before the limits could be fixed the season had advanced so far that the egg clusters had hatched and spraying operations had to be started. In order to protect the remainder of the State and other States from the danger of becoming infested through the transportation of infested materials, the State of Pennsylvania placed under quarantine an area of 409 square miles which scouting had shown to be infested. One more township, of 19 square miles, was placed under quarantine in December 1933, as it was found infested. With the start of the new scouting season last fall the crews of men engaged in control work were assigned to the known infested area where there was the most pressing need for their services in order to perform the eradication work planned. As soon as it was possible to do so, or when working conditions in the known infested area became unsatisfactory, crews were moved into outside territory to continue the search for the border-line of infestation. As was expected, infestations were found in some of the outside townships, and the most recent extension by the State of the area under quarantine was made to bring under regulation all townships in which infestations had been found up to March 1. The extension of area increases the total number of square miles to 700. Included in this 700 square miles, lying in the counties of Carbon, Lackawanna, Luzerne, Monroe, and Wayne, are 68 townships, cities, boroughs, or other political subdivisions and a part of one other township.

The materials under restrictions which move from the quarantined area are shipped mostly to Pennsylvania destinations. As a rule, mine props, lumber, firewood, and junk metals compose the major portion of the materials inspected, with a few shipments of nursery stock, cable reels, and miscellaneous articles.

The gypsy moth control work performed by assigned portions of the personnel at the Civilian Conservation Corps camps, located west of the Connecticut River in New England, has varied somewhat in amount accomplished each month. When the camps were started there was nothing but the sites. Roads had to be constructed, areas cleared, living quarters provided, and numerous buildings erected. All these tasks provided plenty of employment for the entire personnel and it was not until most of this work had been done that men could be spared for other assignments. When gypsy moth control work by camp men was first authorized the number of men who could be spared for this activity was limited. As the season advanced and camp projects neared completion more and more men were placed on control work. It was found, however, that it was impossible to maintain the force at a fixed number, as other activities made it necessary to direct some of the labor to other tasks. Month by month there was considerable fluctuation in the number of men engaged in gypsy moth control. During the winter, which was of unusual severity, there were numerous periods when outdoor work was out of the question, as severe cold and deep snow imposed too great hardships on the men. Immediately after heavy falls of snow many of the men were required for snow removal at the camps and the roads to the camps. As the frost began to come out, camp roads in some places became nearly impassable as, through necessity, they were built rapidly and have not proven equal to holding up under early spring conditions. Much work by camp personnel has been necessary to keep such roads open to traffic. By the end of March the year of enrollment permitted was completed and the men obliged to leave. New enrollments did not begin at once at some of the camps and it may be several weeks before quotas are filled. The changes in personnel will remove many of the

men trained on gypsy moth work and this will make it necessary to train the new men to continue control work already begun. In spite of all handicaps imposed by weather and variations in number of men who could be employed on gypsy moth work, many thousands of acres of woodland have been scouted together with over a thousand miles of roadsides. A number of dangerous gypsy moth infestations have been found and a large number of egg clusters destroyed.

Each spring travel for the scouting force becomes quite difficult because of the condition of the roads. While much of the territory in which work is performed is traversed by hard-surfaced roads, only small portions of the individual towns can be reached from them. The remainder of each town has to be reached over dirt roads and these become impassable in many sections when the frost begins to come out. The past winter had such excessively cold weather that frost penetrated to record depths and, as a result, dirt roads are in much worse condition this spring than usual. Some of them are perfect seas of mud through which it is impossible to drive motor vehicles, and the transportation of men to some sections of towns in which they are working is not possible. There has been some slight improvement in spots but it is expected that many roads will not be in condition for travel until much later.

Among the infestations discovered during the course of the scouting this season is one located in a large camp ground owned by an organization whose members come annually from many portions of the country to spend some time at meetings and exercises. The camp ground covers a considerable area and has many cottages in which the members live during their visits which often last all summer. Many large trees grow on this property; in fact, the entire area is a large grove kept nearly clear of small growth and dead trees by a caretaker who resides there the year round. It is particularly desirable to eradicate this infestation in order to avoid the transportation of any egg clusters to other sections of the country by visitors when they return to their homes at the end of the season.

During the entire winter the force of men employed at the storehouse and repair shop has been engaged in countless tasks connected with the upkeep of the many articles of equipment necessary for the proper conduct of the control work. High-power sprayers are cleaned, painted, and repaired when needed so that they may all be in first-class condition when sent into the field at the start of the spraying season. Small articles, such as bark knives, hand mirrors, and others are made in large lots in order to have ample supplies of these at all times. For the majority of the pieces of equipment nothing is placed in storage for future use until after it has been put in proper condition. The past month much work has been done on snowshoes returned from the field after a most unusually long period of hard service. The almost uninterrupted use throughout the winter, over rough country and often on hard-crusting snow, wore off the varnish from the webbing, and mud chafed through the straps of the foot harnesses necessitating revarnishing and replacing of harness. A specially constructed tank to facilitate dipping shoes in varnish was made, and by this method it has been found possible to handle the large number of snowshoes much more rapidly than would be possible with hand brushes. New spray hose is delivered at the storehouse without the couplings attached and the work of fixing two of these on each length of hose is performed there. By the use of specially designed equipment for the attaching of the couplings, the men assigned to this work are able to make rapid progress. All of the hose purchased this year has had the couplings attached and is in storage ready for the coming spraying season.